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ABSTRACT

An experimental investigation of the transition from associative play to cooperative play was conducted to determine if cooperative play in young children could be facilitated by (1) presenting a toy that required cooperative responses to make it operate, and (2) instructing the children in the use of the toy prior to having them play with it. A novel toy designed for this experiment required cooperative behavior to activate a buzzer. Subjects were 48 2- to 5-year-old nursery school children randomly assigned to subject pairs, then to the following three treatment conditions: no training, partial training, and full training in the use of the toy. Each treatment period was followed by a rest period, then a testing period with the criterion apparatus. Children were again tested after two weeks. Results were analyzed using a 2-way analysis of variance with one repeated measure. Only the training variable was significant. A Duncan's Multiple Range Test revealed that the full training group had a significantly higher response rate that the other two treatment groups. These results were discussed in terms of the complexity of the toy for young children and the possible modeling effect of the full training procedure. (Author/SB)

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Facilitation of Play Behavior From Associative to Cooperative Play Stages

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Running head: Facilitating Cooperative Play

Abstract

An experimental investigation of the transition from associative play to cooperative play was conducted to determine if cooperative play in young children could be facilitated by 1) presenting a toy that required cooperative responses to make it operate, and 2) instructing the children in the use of the toy prior to playing with it. A novel toy was designed for this experiment which required cooperative behavior to activate a buzzer. Subjects were 48 two- to five-year-old nursery school children randomly assigned to subject pairs, then to the following three treatment conditions: No training, partial training, and full training in the use of the toy. Each treatment period was followed by a rest period, then a testing period with the criterion apparatus. Children were again tested after two weeks. Results were analyzed using a two-way Analysis of Variance with one repeated measure. Only the training variable was significant. A Duncan's Multiple Range Test revealed that the full training group had a significantly higher response rate than the other two treatment groups. These results were discussed in terms of the complexity of the toy for young children, as well as the ability of preschool-aged children to play cooperatively when the situation demands this, given that sufficient training in the task is available.

Facilitation of Play Behavior From Associative to Cooperative Play Stages

Classical studies of play categories have recognized that preschool children advance through several stages of play (Parten & Newhall, 1943). Such stages include:

1) Solitary play: the child plays alone;
2) Parallel play: two or more children play side by side in inter-related but not identical activities and do not interact;
3) Associative play: two or more children play side by side, in identical activities but not interacting; and
4) Cooperative play: two or more children interact in a common play venture.

A major question that arises when considering the transition of a child from one stage to another is the role of the environment. Can transition be facilitated by introducing play stimulating toys to children at a lower play stage to sharpen skills necessary in the next stage? The first three stages are characterized by proximity to, but not interaction with another child, and by the nature of the toys involved (e.g., different, similar, identical). Of critical consideration is the transition from associative play to cooperative play as this transition is one involving interactive skills in the child.

Quitlich and Risley (1973) found that the 7 year-olds in their study were greatly influenced by the nature of the toys (either "social" or "isolate") in the amount of social play they exhibited. This indicates that for children who have already reached at least the age appropriate for cooperative play to be present, the frequency of social (cooperative) play can be facilitated or increased in frequency. This study does not consider whether a similar procedure would work for younger children. To test this problem, one method might be to present toys that produce characteristic play interactions (e.g., associative or cooperative play) to children who have not reached the appropriate age level.

In a study of goal-oriented problem solving, Bruner (1975) tested three- to five-year-olds in a stick manipulation task in which the child could reach a prize with a stick if two short sticks were clamped together. In order to facilitate this process, he introduced four "training conditions": 1) one group was allowed to play with sticks before the problem was introduced; 2) a group watched an adult demonstrate the principle of clamping; 3) the children practiced fastening the clamps on single sticks; and 4) the experimenter demonstrated the entire task and goal retrieval. Bruner's results showed that even for this young group, the first (play) group demonstrated the same amount of prize retrieval as the fourth group, to which the entire process had been demonstrated. The second and third groups with partial knowledge were not able to generalize the specific skills to the problem situation.

Neither the Quitlich and Risley nor the Bruner study deal with a second major question which may be raised: Will these differences maintain themselves over time? For example, if children can be trained in play skills, will the effects of this be present two weeks later if tested on the same task?

The purpose of this study was to attempt to answer three questions: 1) Can transition from associative to cooperative play be facilitated by presentation of social toys? 2) Is there a difference due to level of instruction? And 3) will any demonstrated effects persist over a two week time period?

Method

Subjects

The subjects of the experiment were 48 two- through five-year-old children from three local nursery schools. Half of the subjects were male, the other half female. An equal number of subjects were randomly assigned to each of three treatment conditions: no training, partial training, and full training in the use of a novel toy. Subjects were then randomly assigned to pairs within each condition with the constraint of no two siblings being assigned to the same pair. Each group consisted of eight pairs of children.

Apparatus

An "Auto-Beep" toy was designed for this experiment to facilitate cooperative play. It consisted of a wooden box measuring 56.1 cm x 9.9 cm x 25.3 cm with a flat top surface and figure-eight tracks on either

end. Each track had a 5.5 cm model red car and yellow car mounted on the track which could only be moved along the track. Mounted below the tracks was a six volt battery (Eveready, No. 501S) connected to a "beeper" (Toyko Buzzer, Model No. 101) which could be activated only when both red cars were at specific mirror image points on both tracks. Activation of the beeper required both children operating the toy to cooperate and place their respective red cars in the appropriate positions. Children could either play with the cars in an associative manner without activating the beeper, or in a cooperative manner with beeps. Initial pilot testing of the toy indicated that the children enjoyed the beep sound that the toy produced.

A second apparatus consisted of a buzzer system which was activated in a method similar to the signal of the Auto-Beep toy. This consisted of a 8.8 cm red painted block on a single 44 cm track going over a connection point and activating a buzzer system powered by a six volt battery.[1]

Procedure

The three groups of subjects received the following treatments prior to the testing period with the Auto-Beep toy:

Group 1: No Training. Subjects were allowed to play with the Auto-Beep toy for a period of 10 minutes without instruction.

Group 2: Partial Training. Subjects received a 10 minute demonstration of the buzzer system with the second apparatus described above. This was demonstrated by only one experimenter.

Group 3: Full Training. Subjects received a complete demonstration of the Auto-Beep toy by two experimenters, demonstrating how the buzzer system on the toy must be activated by both children playing with the toy.

A five minute rest period preceded the actual testing period. Children were introduced to the testing situation and asked to play with the toy. They were informed that the toy would "beep" and were allowed to play freely with the toy for another 10 minutes. The dependent measure of cooperative play was the number of beeps produced by each set of children during the 10 minute testing period with responses recorded by minute.

Two weeks later, the same sets of children were reintroduced to the situation and allowed another 10 minutes free play with the criterion toy and the number of responses produced during the period recorded.

Results

All of the children but one set from the no training condition engaged at least in associative play with Auto-Beep toy. Results on the dependent measure were analyzed with a two-factor Analysis of Variance with one repeated measure. As can be seen in Table 1, significant effects were found only between the training conditions ($p < .05$). There was no significant change in response rate over the two week period between testing sessions.

Insert Table 1 about here

A Duncan's Multiple Range Test on the three treatment groups showed the full training group (Group 3) to have made significantly more responses than the other two treatment conditions (partial and no training). There was no significant mean difference between the partial training and no training conditions.

Discussion

The results of this experiment indicate that cooperative play was facilitated by instruction in the use of a toy which could be played with in either a cooperative or associative manner. The experimental production of cooperative play among young children in a situation which leads to associative play without intervention is consistent with Quitlich and Risley's (1973) results with older children. Unlike Bruner's (1975) study, however, the no training group emitted significantly fewer cooperative responses than the full training group. Bruner found no training criterion response rate to be higher than that of his partial training groups. While mean group responses for the partial training group were slightly higher than for the no training group, the lack of significance suggests that partial training may not provide an effective means for problem solving necessary at least in this toy to produce cooperative interaction.

The differences between these and the Bruner results may be due to the complexity of the task involved. The solution was not readily apparent, although all subjects were informed that the toy would beep. There was

considerable discussion among the children outside of the testing situation; however, much of this shared information was incorrect. For example, one child was overheard telling another child that the toy would produce the noise when she "poked the windshield of the red car."

The higher response rate in the full training group may also be at least partially due to the modeling effect of two people demonstrating the toy. Only one person demonstrated the training apparatus in the partial training condition. The partial training group knew that the toy would make a noise, but not that it required both children to activate it. Like Bruner's partial training groups, this information appeared to be too specific to generalize to the cooperative task.

The present results lend support to the premise that preschool children can be induced to make cooperative responses at increased rates when the situation demands it. All of the children in the no training and partial training groups knew that the toy would beep but most could not produce the cooperative play required for making it respond. This suggests that 1) more information and 2) modeling of the desired cooperative response will increase the cooperative play rate even on a fairly complex task. The increased frequency of cooperative responding does not appear to suffer a decrement over at least a two-week time period. Whether this type of cooperative play generalizes to other social settings should be pursued in future research.

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Footnotes

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[1]Detailed descriptions and sketches of both the criterion and the partial training toys are available from the first author.

Table 1

Analysis of Variance

Source	df	MS	F
Between Subjects	23		
Training Condition	2	466.94	3.48*
$Error_b$	21	134.17	
Within Subjects	24		
Trials	1	154.08	1.64
Trials x Training Condition	2	25.27	0.27
$Error_w$	21	94.19	

*$p < .05$